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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,769	03/03/2004	Kazunori Yamanaka	040094	3203

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EXAMINER	
MANCUSO, HUEDUNG XUAN CAO	
ART UNIT	PAPER NUMBER
2821	

MAIL DATE	DELIVERY MODE
09/25/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/790,769	YAMANAKA ET AL.	
	Examiner	Art Unit	
	Huedung Cao Mancuso	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's remarks have been fully considered and have been found to be convincing with respect to Park. Specifically, the applicant argues that the claim requires an "electromagnetic coupled via a space" and that this is not shown by the references. However, a new reference that shows this very conventional technique is applied in the rejections below and this action is made non-final.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 2-11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted Prior Art (Specification, page 1-3) in view of Park (US 6,850,128 B2) and further in view of Choudhury (US 4,985,400).

As to claim 10, Prior Art teaches an antenna coupling module comprised of a planar antenna and a substrate forming a planar superconductive high frequency circuit arranged in a perpendicular direction with respect to the element surface of said planar

antenna and having said planar antenna (Specification, page 1, line 32-page 2, line 30). It is noted that Prior art does not explicitly disclose that said planar antenna and said superconductive high frequency circuit electromagnetically coupled via a space. However, Park teaches such electromagnetically coupling via a space is well known in the art (see Park Abstract "electrical coupling relies on electromagnetic coupling ... as opposed to direct contact between conductors", for example). Further, the basic idea of electromagnetically connecting elements via space (rather than a direct physical connection) is extremely well known in these types of devices and Park is cited as one example of this basic concept. Also, Park, like the other references, is directed to an antenna system, so is therefore relevant and analogous prior art. It would have been obvious to one of ordinary skill in the art at the time the invention was made by having said planar antenna and said superconductive high frequency circuit electromagnetically coupled via a space because without the through hole there're will be no disrupt structural integrity of material. Furthermore, PA and Park do not explicitly teach that the oxide superconductor for said superconductive high frequency circuit or said planar antenna is at least one type of oxide high-temperature superconductor selected from the group comprised of Bi.sub.n1Sr.sub.n2Ca.sub.n3Cu.sub.n4O.sub.n5 (where, 1.8.ltoreq.n1.ltoreq.2.2, 1.8.ltoreq.n2.ltoreq.2.2, 0.9.ltoreq.n3.ltoreq.1.2, 1.8.ltoreq.n4.ltoreq.2.2, and 7.8.ltoreq.n5.ltoreq.8.4), Pb.sub.k1Bi.sub.k2Sr.sub.k3Ca.sub.k4Cu.sub.k5O-.sub.k6 (where, 1.8.ltoreq.k1+k2.ltoreq.2.2, 0.ltoreq.k1.ltoreq.0.6, 1.8.ltoreq.k3.ltoreq.2.2, 1.8.ltoreq.k4.ltoreq.2.2, 1.8.ltoreq.k5.ltoreq.2.2, and 9.5.ltoreq.k6.ltoreq.10.8),

Y.sub.m1Ba.sub.m2Cu.sub.m3O.sub.m4 (where, 0.5.ltoreq.m1.ltoreq.1.2, 1.8.ltoreq.m.ltoreq.2.2, 2.5.ltoreq.m3.ltoreq.3.5, and 6.6.ltoreq.m4.ltoreq.7.0), Nd.sub.p1Ba.sub.p2Cu.sub.p3O.sub.p4 (where, 0.5.ltoreq.p1.ltoreq.1.2, 1.8.ltoreq.p2.ltoreq.2.2, 2.5.ltoreq.p3.ltoreq.3.5, and 6.6.ltoreq.p4.ltoreq.7.0), Nd.sub.q1Y.sub.q2Ba.sub.q3Cu.sub.q4O.sub.q5 (where, 0.ltoreq.q1.ltoreq.1.2, O.ltoreq.q2.ltoreq.1.2, 0.5.ltoreq.q1+q2.ltoreq.1- .2, 1.8.ltoreq.q2.ltoreq.2.2, 2.5.ltoreq.q3.ltoreq.3.5, and 6.6.ltoreq.q4.ltoreq.7.0), Sm.sub.p1Ba.sub.p2Cu.sub.p3O.sub.p4. Choudhury teaches those oxide superconductor is well known in the art see Choudhury (col. 1, line 56). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use such oxide superconductor to enhance the signal of the antenna.

As to claim 2, wherein the perpendicular distance of the electromagnetically coupled space has a length of not more than 1/4 of the effective wavelength which Prior art does not explicitly disclose. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made that various length of electromagnetically coupled space can be used depending upon the desired application in order to improve and strength a performance of the antenna.

As to claim 3, wherein said effective wavelength includes from a microwave to a milliwave band (Specification, page 2, lines 31-36).

As to claim 4, wherein said planar antenna and said superconductive high frequency circuit have a ¼ wavelength type feeder line, respectively as a coupling circuit thereof (Specification, page 3, lines 25-32).

As to claim 5, wherein a dielectric body is arranged between 1/4 feeder lines for coupling circuit of said planar antenna and said superconductive high frequency circuit (Specification, page 3, lines 25-32).

As to claim 6, wherein at least one type of ingredient selected from the group consisting of magnesium oxide, mullite, forsterite, titanium oxide, lanthanum aluminate, sapphire, alumina, strontium titanate, magnesium titanate, calcium titanate, quartz glass, polytetraiuoro-ethylene, polyethylene, a polyimide,polymethylmethacrylate, a glass-epoxy composite, and a glass-polgetraiuoroethylene composite is used as the ingredient of the dielectric body (Specification, page 3, lines 4-8).

As to claim 7, wherein an oxide superconductor is used as the conductor of said superconductive high frequency circuit, and said superconductive high frequency circuit has at least one type of circuit selected from the group comprised of a phase circuit, filter circuit, through line, delay circuit, coupler, distribution circuit, and composite circuit (Specification, page 2, lines 7-19, and lines 19-25).

As to claim 8, wherein said planar antenna has at least one type of antenna element of the dipole type, patch type, and log-periodic type (Specification, page 2, lines 7-10).

As to claim 9, wherein an oxide superconductor is used as the conductor for said planar antenna (Specification, page 2, lines 19-25).

Regarding claims 10, and 13, the Prior art fails to specifically teach that the oxide superconductor for said superconductive high frequency circuit or said planar antenna is at least one type of oxide high-temperature superconductor selected from the group

comprised of Bi.sub.n1Sr.sub.n2Ca.sub.n3Cu.sub.n4O.sub.n5 (where, 1.8.ltoreq.n1.ltoreq.2.2, 1.8.ltoreq.n2.ltoreq.2.2, 0.9.ltoreq.n3.ltoreq.1.2, 1.8.ltoreq.n4.ltoreq.2.2, and 7.8.ltoreq.n5.ltoreq.8.4), Pb.sub.k1Bi.sub.k2Sr.sub.k3Ca.sub.k4Cu.sub.k5O- .sub.k6 (where, 1.8.ltoreq.k1+k2.ltoreq.2.2, 0.ltoreq.k1.ltoreq.0.6, 1.8.ltoreq.k3.ltoreq.2.2, 1.8.ltoreq.k4.ltoreq.2.2, 1.8.ltoreq.k5.ltoreq.2.2, and 9.5.ltoreq.k6.ltoreq.10.8), Y.sub.m1Ba.sub.m2Cu.sub.m3O.sub.m4 (where, 0.5.ltoreq.m1.ltoreq.1.2, 1.8.ltoreq.m.ltoreq.2.2, 2.5.ltoreq.m3.ltoreq.3.5, and 6.6.ltoreq.m4.ltoreq.7.0), Nd.sub.p1Ba.sub.p2Cu.sub.p3O.sub.p4 (where, 0.5.ltoreq.p1.ltoreq.1.2, 1.8.ltoreq.p2.ltoreq.2.2, 2.5.ltoreq.p3.ltoreq.3.5, and 6.6.ltoreq.p4.ltoreq.7.0), Nd.sub.q1Y.sub.q2Ba.sub.q3Cu.sub.q4O.sub.q5 (where, 0.ltoreq.q1.ltoreq.1.2, O.ltoreq.q2.ltoreq.1.2, 0.5.ltoreq.q1+q2.ltoreq.1- .2, 1.8.ltoreq.q2.ltoreq.2.2, 2.5.ltoreq.q3.ltoreq.3.5, and 6.6.ltoreq.q4.ltoreq.7.0), Sm.sub.p1Ba.sub.p2Cu.sub.p3O.sub.p4 (where, ss to claim 11, wherein said planar antenna is a non-superconductive element which Prior art does not explicitly disclose. However, it is inherent that the planar antenna is made out with non-superconductive element for different kind of antenna system.

Claim 13 is similar in scope to claim 10; therefore, it is rejected for the same reason.

4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted Prior Art (Specification, page 1-3) in view of Park et al. (US 6,850,128 B2) and Choudhury (US 4,985,400), and further in view of Shen (High temperature superconducting microwave circuits).

Claim 12 adds into claim 1, wherein said superconductive high frequency circuit or said planar antenna is cooled to not more than 100K which none of the above prior art explicitly teach. However, Shen teaches the superconductive high frequency circuit or the planar antenna is cooled to not more than 100K is well known in the art (Shen, pages 104-105). It would have been obvious to one of ordinary skill in the art at the time the invention was made, in view of teaching of Shen to configure Prior art's antenna system as claimed, doing so it would help to get the desired frequency needed.

Inquiries

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huedung Mancuso whose telephone number is (571) 272-1939.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas Owens, can be reached on (571) 272-1662. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Huedung Mancuso
Patent Examiner